

**ABSTRACT**

A direct-electrochemical-oxidation fuel cell and method for generating electrical energy from a solid-state organic fuel. The fuel cell includes a cathode provided with an electrochemical-reduction catalyst that promotes formation of oxygen ions from an oxygen-containing source at the cathode, an anode provided with an electrochemical-oxidation catalyst that promotes direct electrochemical oxidation of the solid-state organic fuel in the presence of the oxygen ions to produce electrical energy, and a solid-oxide electrolyte disposed to transmit the oxygen ions from the cathode to the anode. The electrochemical oxidation catalyst can 5 optionally include a sulfur resistant material.